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| EXAMINER SMITH, CHAD | | | | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/565,152

Applicant(s)

MCNIE ET AL.

Examiner

Chad H. Smith

Art Unit

2874

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 May 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-43 is/are pending in the application.
- 4a) Of the above claim(s) 4 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-12, 14-25, 27 and 29-43 is/are rejected.
- 7) ☒ Claim(s) 13, 26 and 28 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

Examiner agrees that claims 1, 22, and 23 are generic to all species. Furthermore, applicant's arguments with respect to claims 1 – 3, and 5 – 43 have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

Claim 23 objected to because of the following informalities: "one or more one optical fibres" should read "one or more optical fibres". Appropriate correction is required.

Allowable Subject Matter

Claim 13 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record, taken alone or in combination, fails to disclose or render obvious wherein said output means is arranged to couple each of said plurality of modulated beams into one of a plurality of output optical fibres.

Claim 26 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The following is a statement of reasons for the indication of allowable

subject matter: The prior art of record, taken alone or in combination, fails to disclose or render obvious radiation from each of said plurality of optical fibres is guided to one of the plurality of detectors.

Claim 28, is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record, taken alone or in combination, fails to disclose or render obvious a wavelength demultiplexing means.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Jenkins et al. (U.S. Patent # 5,917,596).

In Re claim 1, '596 teaches a transmitter apparatus comprising one or more lasers (706), modulation means to intensity modulate radiation output by each of said one or more lasers (726), and output means for outputting the modulated radiation produced by the modulation means (740); and hollow core optical waveguides formed in a substrate for guiding radiation

from the one or more lasers to the modulation means and from the modulation means to the output means (col. 21, lines 9 – 12).

In Re claim 9, '596 teaches a laser (706).

In Re claim 16, '596 teaches a detector (734).

In Re claim 17, '596 teaches an optical isolator (the combination of 716 and 718).

In Re claims 18 and 19, '596 teaches beam shaping by a lens (720).

In Re claim 21, '596 teaches an electro-optic modulator (726).

In Re claim 33, '596 teaches a receiver (734).

In Re claim 39, '596 teaches hollow cores of rectangular cross section (fig. 3).

In Re claims 40 and 41, '596 teaches a fundamental mode as the modes are generated by the mode generator and necessarily one of those modes must be the fundamental mode of the waveguide structure. Furthermore, multiple modes are returned from the scene and propagate through the waveguides (abstract).

In Re claim 43, '596 teaches a base and lid portion (312 and 316, respectively).

Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Wojnarowski et al. (U.S. Patent # 5,525,190).

'190 teaches a transmitter apparatus comprising one or more lasers (laser diode), modulation means for information modulating radiation output by each of said one or more lasers (electro-optical device), output means for outputting the modulated radiation produced by the modulation means; and hollow core optical waveguides formed in a substrate for guiding radiation from the one or more lasers to the modulation means and from the modulation means to the output means (hollow micro-tunnel).

In Re claim 33, '190 teaches a receiver apparatus (photodetector).

In Re claim 34, '190 teaches the transmitter and receiver formed on a common substrate (fig. 7).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Foord et al. "(A Hollow Waveguide Integrated Optic System with at Integrated Laser Source", Proceeding of SPIE, Vol. 4035 (2000) Pages 346 – 353) in view of Sheem (U.S. Patent # 5,515,464).

In Re claims 1, 5, and 22, Foord et al. teaches a transmitter apparatus comprising one or more lasers (CO₂), modulation means to for information modulating radiation output by each of said one or more lasers (quarter-wave plate), characterized in that the apparatus comprises hollow core optical waveguides formed in a substrate for guiding radiation from the one or more lasers to the modulation means and from the modulation means to the output means (section 1 par. 2). Foord et al. is silent to an output means for outputting the modulated radiation produced by the modulation means. '464 teaches an optical fiber connection to a hollow channel (abstract). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Foord et al.'s transmitting apparatus with '464's teaching of an

optical fiber connection to a hollow channel so as to be able to easily adjust the direction of the optical signal by maneuvering the optical fiber rather than the transmitter apparatus system.

In Re claims 2 and 3, Foord et al. teaches the quarter-wave plate as a discrete component in an alignment slot (fig. a).

In Re claim 6, '464 teaches a core extension (6).

In Re claim 8, '464 teaches mode matching means (col. 5, lines 1 – 7).

In Re claims 9 and 10, Foord et al. teaches a plurality of lasers (fig. a and section 2, par. 5).

In Re claim 11, Foord et al. teaches different output wavelengths (section 2, par. 5).

In Re claim 12, Foord et al. teaches combining modulated beams (section 2, par. 5).

In Re claim 18, Foord et al. teaches beam shaping means as the hollow waveguides themselves shape the beam.

In Re claim 19, '464 teaches a tapered hollow core waveguide (fig. 9).

In Re claims 37 and 38, applicant is claiming the product including the process of making the transmitter apparatus, and therefore are of "product-by-process" nature. The courts have been holding for quite some time that: the determination of the patentability of product-by-process claim is based on the product itself rather than on the process by which the product is made. In re Thrope, 777 F. 2d 695, 227 USPQ 964 (Fed. Cir. 1985); and patentability of claim to a product does not rest merely on a difference in the method by which that product is made. Rather, it is the product itself which must be new and unobvious. Applicant has chosen to claim the invention in the product form. Thus a prior art product which possesses the claimed product characteristics can anticipate or render obvious the claim subject matter regardless of the manner in which it is fabricated. A rejection based on 35 U.S.C. section 102 or alternatively on 35 U.S.C. section 103 of the status is eminently fair and acceptable. In re Brown and Saffer, 173 USPQ 685 and 688; In re Pilkington, 162 USPQ 147. As such no weight is given to the process steps recited in claims 37 and 38.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Foord et al. "(A Hollow Waveguide Integrated Optic System with at Integrated Laser Source", Proceeding of SPIE, Vol. 4035 (2000) Pages 346 – 353) in view of Sheem (U.S. Patent # 5,515,464) and further in view of Nelson et al. (U.S. Patent # 3,984,332).

The previous combination teaches the apparatus of claim 6 as previously discussed above, but is silent to a lensed output optical fiber. '332 teaches a lensed output optical fiber (col. 4, lines 37 – 40). It would have been obvious to one of ordinary skill in the art at the time the

invention was made to combine the teachings of the previous combination with '322's teaching of a lensed output optical fiber to minimize dispersion.

Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Foord et al. "(A Hollow Waveguide Integrated Optic System with at Integrated Laser Source", Proceeding of SPIE, Vol. 4035 (2000) Pages 346 – 353) in view of Sheem (U.S. Patent # 5,515,464) and further in view of Gotoda (U.S. Patent # 6,643,309 B1).

The previous combination teaches the apparatus of claim 1 as previously discussed above, but is silent to a wavelength tuneable semiconductor laser. '309 teaches a wavelength tuneable semiconductor laser (col. 10, lines 60 – 64). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the previous combination with '309's teaching of a wavelength tuneable semiconductor laser being that this type of laser consumes very little current when tuning.

Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Foord et al. "(A Hollow Waveguide Integrated Optic System with at Integrated Laser Source", Proceeding of SPIE, Vol. 4035 (2000) Pages 346 – 353) in view of Sheem (U.S. Patent # 5,515,464).

An information modulated radiation receiver apparatus comprising: at least one hollow core optical waveguide formed in a substrate (HOWIO); one or more detectors (section 1, par. 1) and said at least one hollow waveguide guiding said radiation in two transverse directions

(section 3, par. 2). Foord et al. is silent to one or more optical fibre attachment means, the one or more optical fibre attachment means adapted to receive one or more optical fibres, wherein said radiation is guided from the one or more optical fibres to the one or more detectors by said at least one hollow core optical waveguide. '464 teaches an attachment means to a hollow channel (abstract). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Foord et al.'s transmitting apparatus with '464's teaching of an optical fiber connection to a hollow channel so as to be able to easily adjust the direction of the optical signal by maneuvering the optical fiber rather than the receiver apparatus system.

In Re claim 29, Foord et al. teaches a VOA (section 2, par. 3, as an EO can vary the amplitude which is changing the attenuation).

In Re claim 30, Foord et al. teaches a wavelength selective filter (the laser).

In Re claim 31, '464 teaches mode matching means (col. 5, lines 1 – 7).

Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Foord et al. "(A Hollow Waveguide Integrated Optic System with at Integrated Laser Source", Proceeding of SPIE, Vol. 4035 (2000) Pages 346 – 353) in view of Sheem (U.S. Patent # 5,515,464) and further in view of Nelson et al. (U.S. Patent # 3,984,332).

The previous combination teaches the apparatus of claim 6 as previously discussed above, but is silent to a lensed output optical fiber. '332 teaches a lensed output optical fiber (col.

4, lines 37 – 40). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the previous combination with '322's teaching of a lensed output optical fiber to minimize dispersion.

Claim 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over Foord et al. "(A Hollow Waveguide Integrated Optic System with at Integrated Laser Source", Proceeding of SPIE, Vol. 4035 (2000) Pages 346 – 353) in view of Sheem (U.S. Patent # 5,515,464) and further in view of Wojnarowski et al. (U.S. Patent # 5,525,190).

The previous combination teaches the apparatus of claim 1 as previously discussed above, but is silent to a reflective coating. '190 teaches a reflective coating (col. 4, lines 30 – 31).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the previous combination with '190's teaching of a reflective coating so as to lessen the optical attenuation of the optical signal.

Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jenkins et al. "(A Hollow Waveguide Integrated Optic System for a 10.6 micron Range-Doppler Imaging Lidar at Integrated Laser Source", Proceeding of SPIE, Vol. 4034 (2000) Pages 108 – 113) in view of Sheem (U.S. Patent # 5,515,464).

Jenkins et al. teaches an information modulated radiation receiver apparatus comprising: at least one hollow core optical waveguide formed in a substrate (HOWIO); one or more detectors (fig. 3) and said at least one hollow waveguide guiding said radiation in two transverse directions (section 4, par. 1). Jenkins et al. is silent to one or more optical fibre attachment

means, the one or more optical fibre attachment means adapted to receive one or more optical fibres, wherein said radiation is guided from the one or more optical fibres to the one or more detectors by said at least one hollow core optical waveguide. '464 teaches an attachment means to a hollow channel (abstract). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Foord et al.'s transmitting apparatus with '464's teaching of an optical fiber connection to a hollow channel so as to be able to easily adjust the direction of the optical signal by maneuvering the optical fiber rather than the receiver apparatus system.

In Re claim 24, Jenkins et al. teaches a plurality of detectors (fig. 3).

In Re claim 25, providing the teachings of Sheem to all of the exit areas of the substrate of fig. 3 allows the transmitted signal to be concentrated on the detectors.

In Re claim 27, '464 teaches that the optical fiber attachment means is capable of use in multiplexing (col. 2, line 64).

Claims 35 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jenkins et al. (U.S. Patent # 5,917,596) in view of Jones (U.S. PG Pub. # 2005/0213880 A1).

'596 teaches the apparatus of claim 1 as previously discussed above, but is silent to the substrate comprising SOI. '880 teaches using SOI to serve as cladding to help confine light. It would have been obvious to one of ordinary skill in the art at the time the invention was made to

combine the teachings of '596's apparatus with '880's teaching of using SOI to serve as cladding to help confine light as this lessens the attenuation of the optical signal.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chad H. Smith whose telephone number is (571) 270-1294. The examiner can normally be reached on Monday-Thursday 7:00 am - 4:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on 571-270-2344. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Chad H Smith/
Examiner, Art Unit 2874

/Sung H. Pak/
Primary Examiner, Art Unit 2874

